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OPERATIONS MANUAL

FOR

DISPOSITION

OF

PCB'S

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INTRODUCTION

Polychlorinated biphenyl (PCB) was invented in 1929 as a dielectric fluid for capacitors and patented in 1931 for use as a transformer coolant. Throughout its history, PCB has been manufactured principally by Monsanto under the generic name of "askarel".

Fluids containing PCB have been used for more than 50 years for cooling and insulating electrical equipment in applications requiring a fire-resistant fluid. In addition to having excellent fire resistance, PCB has outstanding heat-transfer and dielectric properties, and is exceptionally stable. But it is this chemical stability that has necessitated stringent federal regulations governing PCB handling, storage, use, and disposal. (See Table III of the Appendix for chemical and physical data relating to PCB.)

Briefly, the danger of the chemical is its tendency to bioaccumulate. PCB's thrown into the wrong landfill may sink into the water table. From there, they may find their way into cattle feed, or some part of the food chain. From the cattle, they may eventually reach your body. If they do, you risk any number of toxic effects, including digestive disturbances, impotence, jaundice, respiratory irritations, severe headaches, and possibly cancer.

It is this toxicity hazard that has necessitated the regulation of PCB's and now presents itself as incumbent on all Consolidated Aluminum plants to understand and comply with those regulations or face stringent civil and/or criminal penalties.

BACKGROUND

Who regulates?

The handling, use, storage, and disposal of PCB is now regulated by the Toxic Substances Control Act (TSCA) which in its revised format became effective July 2, 1979. The current TSCA regulations appear in the May 31, 1979 Federal Register. Additional recent measures are found in the March 10, 1981 Federal Register.

Who Applies?

TSCA applies to all parties who manufacture, process, distribute in commerce, transport, and USE OR DISPOSE OF PCB-related materials. Notable are owners of PCB-cooled capacitors and transformers and oil cooled transformers that have inadvertently been contaminated with minute quantities of PCB's.

What Applies?

All transformers that were manufactured before the mid-1970's invariably contain PCB's. Capacitors that contain more than 3 gallons of coolant and that qualify for indoor use will contain PCB's if they were manufactured before the mid-1970's. Such equipment manufactured in the latter half of the 1970's may or may not contain PCB's; however, no PCB-cooled electrical equipment is manufactured today.

According to the EPA, 35% to 40% of mineral oil transformers are also contaminated with PCB's. Thus, all transformers are assumed to be contaminated unless they are tested and their safety is proven. The only way to ascertain that an oil-filled transformer does not expose the owner to liability under TSCA is to test the coolant by EPA approved methods.

Which fluids are PCB?

"Askarel" was commonly wholesaled to second parties and redesignated by a private label trademark. The designations "askarel" and "PCB" are rarely found on the nameplates of transformers or capacitors. Among the more common trademarks for PCB fluids are the following:

<u>FLUID NAME</u>	<u>MANUFACTURER OR SUPPLIER</u>
Aroclor	Monsanto
Asbestol	American Corp.
Askarel	Monsanto
Chorextol	Allis-Chalmers
Elemex	McGraw-Edison
Inverteen	Westinghouse

<u>FLUID NAME</u>	<u>MANUFACTURER OR SUPPLIER</u>
No Flomol	Wagner
Pyranol	General Electric
Saf-T-Kulk	Kuhlman
Clophen	Bayer (Germany)
DK	Caffaro (Italy)
Fenclor	Coffaro (Italy)
Kennechlor	Mitsubishi (Japan)
Phenoclor	Prodelec (France)
Pyralene	Prodelec (France)
Sanotherm	Mitsubishi (France)

What to do?

The law at present does not require that PCB cooled transformers now in use be removed from service. However, owners of such units face potential liability in the event that any of their PCB enters the environment. Potential liability is especially severe if the transformer is located along a drainage canal, stream, or other waterway that might carry PCB far from the transformer.

Owners of PCB-related equipment may retain or dispose of the equipment in accordance with EPA regulations. Unless leaks exist or major repairs are required, PCB capacitors and transformers can remain in service indefinitely. So long as no leakage occurs, and major repairs are not needed, the only requirements are that the PCB units be properly labeled and that records required under the law be maintained.

What is liability?

Violators of TSCA regulations are subject to civil penalties of \$25,000 and criminal penalties of up to \$25,000 for each day that a violation exists, up to one year in prison, or both. Each day a violation continues can be considered to be a separate offense.

SUMMARY OF REGULATIONS

The following summary is not to be construed as a comprehensive presentation of the regulations, but should be used as a guideline in determining a plant's actions to comply with the obligations of the law. (For details, consult the TSCA regulations in the 5/31/79, Federal Register).

Definitions

To evaluate one's liability, the following terms need to be defined.

PCB Transformer - A PCB Transformer is defined as any transformer containing PCB's in a concentration of 500 ppm or more.

PCB Contaminated Transformer - A PCB Contaminated Transformer is defined as any transformer containing 50 ppm or more, but less than 500 ppm of PCB.

Most PCB Transformers that have been retrofilled with a non-PCB fluid, and many mineral-oil-filled transformers, fall under the definition of PCB contaminated. The distinction between "PCB Transformer" and "PCB Contaminated Transformer" is important in determining one's obligations with regard to labeling, record keeping, disposition, etc.

Non-PCB - Transformers containing less than 50 ppm of PCB are not covered by the law.

Obligations

- All "PCB Transformers" - whether in service or not - must be identified as such with an EPA-designated label. "PCB Contaminated Transformers" need not be labeled.
- Records on the status of all PCB Transformers and on PCB fluids that might be on hand for topping off transformer liquid level must be maintained. Records for any PCB removed from service and awaiting disposal, and such PCB as has been disposed of, must be maintained. Records must be current as of July 1st of every year and must be available for at least 5 years.
- Any uncontrolled discharge that enters the environment must be reported to the proper authorities as prescribed by TSCA regulations. Affected areas containing PCB in a concentration of 50 ppm or more must be decontaminated according to EPA prescribed procedures. All contaminated solids - dirt, debris, rags, and absorbents used in clean-up, etc. must be stored in approved containers and shipped to an approved facility for disposal according to TSCA regulations.

- PCB removed from service cannot be stored for any period; it must be removed to an EPA approved disposal facility for destruction or to an approved temporary storage facility.
- Carcasses of retired "PCB Transformers" must be treated in accordance with prescribed procedures and disposed of in an EPA approved landfill.
Carcasses of "PCB Contaminated Transformers" can be sold for scrap following prescribed treatment.
- Rebuilding of "PCB Transformers" is not permitted.
"PCB Contaminated Transformers" can be rebuilt, provided that a prescribed timetable regarding its documentation as a contaminated (only) unit has been met.
- Effective May 11, 1981, all "PCB Transformers" must be inspected for leaks at least once every three months. Inspection records shall be retained for three years.

IDENTIFICATION OF SOURCES

A prudent course of action is to conduct a one-time test for all oil-filled transformers. Tests can be conducted over a period of time as the budget permits, with priority given to those units that expose the owner to maximum liability (such as those located along waterways) and to those nearing the end of life (thereby minimizing disposal costs).

Many electrical equipment testing contractors provide PCB analysis services; a roster of contractors can be obtained from the National Electrical Testing Association (NETA), P.O. Box 2076, Dayton, OH. 45429. The testing contractor will provide sampling and shipping instructions, and some will provide sample-shipping containers.

A partial list of suppliers who provide transformer testing services is included below:

BES, Inc.
5009 N. Highway 288
Clute, TX 77531

Electro-Test, Inc.
P.O. Box 159
San Ramon, CA 94583

Trans-Corp
(A subsidiary of High Voltage
Maintenance Corp.)
7200 Industrial Park Blvd.
Mentor, OH 44060

Transformer Maintenance Institute
Division of S. O. Myers, Inc.
P.O. Box 3575
Akron, OH 44310

LABELING REQUIREMENTS

(Federal Register - 5/31/79 - Pages 31521, 31548, 31556)

The distinction between "PCB Transformer" and "PCB Contaminated Transformer" is important with regard to labeling requirements.

- "PCB Contaminated Transformers" (those containing more than 49 ppm but less than 500 ppm of PCB) need not be labeled.
- "PCB Transformers" (those containing more than 500 ppm PCB) do require labeling.
- All PCB items (including PCB containers, PCB article containers, PCB articles, PCB equipment, and PCB capacitors) which contain 50 ppm or greater PCB's, do require labeling.
- All transport vehicles loaded with PCB containers that contain more than 45 kg (99.4 lbs) of PCB's in the liquid phase or with one or more PCB Transformers, do require labeling. The label must be displayed on each end and side of the vehicle.
- All above labeling requirements were effective no later than 1/1/79, and apply to items in storage as well as in service.

Items requiring labeling must be identified with the official large form mark (M_L , shown in Figure 1) if possible, or the small mark (M_S shown in Figure 2) if the item is too small to accommodate the M_L mark. All markings must be placed in a position on the exterior of the PCB items so that they can be easily read by persons inspecting or servicing the marked PCB items. (Detailed requirements for size, color and durability are given in the Federal Register, 5/31/79, Annex V, page 31556.)

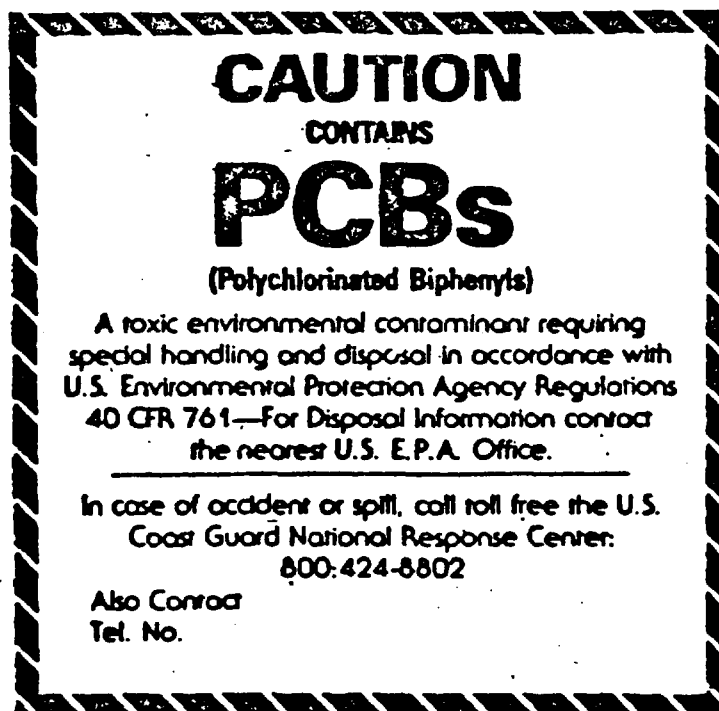


Figure 1

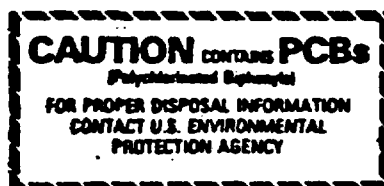


Figure 2

FIGURES 1 and 2 - Samples of labels

RECORD KEEPING

(Federal Register - 5/31/79 - page 31557)

Who?

Effective July 2, 1978, records must be maintained on the status of all PCB items for any facility that meets one or more of the following criteria:

- ° Ownership or operation of one or more PCB Transformers.
- ° Ownership or operation of 50 (fifty) or more large high or low-voltage PCB capacitors.
- ° Possession of 45 kg (99.4 lbs) or more of PCB chemical substances or mixtures.

When?

Records must be current as of July 1st of every year, and must be retained for at least five (5) years after the facility ceases to own or operate PCB related items.

Where?

Multi-plant companies and companies that own or operate PCB-related items at scattered locations may maintain all records at a central location.

What?

The following information shall be included in the annual document:

A. PCB Items Remaining In Service

1. Location, identification, and weight (in Kilograms) of PCB's and PCB items.
2. Location of PCB Transformers, and weight (in Kilograms) of any PCB's contained in the transformers.
3. Location of all PCB large, high and low-voltage capacitors.

B. PCB Items Removed From Service

1. Date item was removed from service.
2. Date item was placed in storage pending disposal.
3. Date item was placed in transport for disposal.

4. Identification of PCB's and PCB items in PCB article containers, and total weight (in Kilograms) of the contents of the container for items 1 through 3 above.
5. Number and identification of PCB Transformers and weight (in Kilograms) of PCB's contained in the transformers.
6. Number of PCB large, high and low-voltage capacitors.
7. Location and name of owner of interim storage facility or disposal facility.

Examples of Annual PCB Documentation Records are illustrated in Attachments 1 and 2 of the Appendix.

Special Inspection Records

Effective May 11, 1981, the following additional records regarding leak inspections must also be maintained for "PCB Transformers":

- Inspection and servicing records for "PCB Transformers" must be retained for a period of three years.
- The records shall include for each "PCB Transformer" the location, date of inspection, identification of inspector, notation of any leaks, date of leak, date of servicing, and description of servicing.

A proposed Inspection Record Sheet is illustrated in Attachment 3 of the Appendix.

LEAKS AND SPILLS OF PCB's

Any attempt to ignore or conceal a leak, spill, or other uncontrolled discharge of PCB is considered an act of unlawful discharge. All moderate leaks and spills should be reported to the Corporate Director of Environmental Affairs.

Leaks

Two categories of leaks have been specified by the EPA - Those are "leaks" and "moderate leaks". Precise interpretation of the two categories is somewhat vague, but the following is the best understanding of the requirements.

"Leak" means any instance in which a PCB article, PCB container, or PCB equipment has any PCB's on any portion of its external surface.

"Moderate leak" means any leak which results in any quantity of PCB's running off or about to run off the external surface of the PCB unit.

The following action shall be taken in each of the instances:

"Leaks" -

- All leaks shall be recorded.
- Wipe any liquid PCB from the surface of the unit. Dispose of the sorbent material in the proper manner.
- If it is apparent that no additional leakage is occurring, no additional action is required.

"Moderate Leaks" -

- Moderate leaks must be recorded, and servicing to clean up and/or repair the "moderate leak" must begin within two business days from the date of observance.
- Transfer moderate leaking containers and articles, and/or their contents, to properly marked non-leaking containers.
- Clean up leaked liquid with appropriate sorbents. Enough sorbents must be used to convert the liquid to a non-flowing mixture.
- Dispose of (or store for future disposal) the sorbent residue per the criteria listed in the Disposal Section of this document. Storage is permitted for up to 30 days in EPA-DOT approved containers, in a location at which the containers will not be subject to damage.

Spills

A PCB "spill" is defined as any discharge of sufficient magnitude to give reason to suspect that it has produced, at any point in the surrounding soil, gravel sludge, fill, rubble, or other land-based substances, a PCB-concentration level exceeding 50 ppm. The following actions shall be taken in the event of a PCB spill:

- Transfer, clean up, and dispose of the spilled material in the same manner as described above for "moderate leaks".
- Conduct tests, using EPA-approved sampling techniques and laboratory methods, to determine if the PCB concentration in the soil, etc. exceeds 500 ppm.
- Decontaminate areas containing more than 500 ppm in accordance with EPA instructions.

PREVENTATIVE MEASURES

Programs should be established to minimize the risks of "leaks" or "spills", and procedures should be in place to deal expediently with any uncontrolled discharges of PCB's. The following safety measures are recommended:

- Develop and document formal procedures to be enacted in the event of a spill.
- Train appropriate personnel to carry out the established procedures.
- Periodically inspect all transformers for leakage and possible causes of failure. Specifically, check the integrity of all bellow-liquid gaskets, valves, gauges, and fittings.
- Obtain a supply of DOT/EPA approved containers to contain any liquid and other contaminated material resulting from a spill.
- Evaluate constructing an EPA-approved storage facility on the plant site.
- Inspect storage facilities at least once every 30 days for leaks.
- Install diking and curbing around transformers located near drains or waterways.

INSPECTION & RECORDS

PCB Transformers must be inspected and records must be maintained as detailed in the RECORD KEEPING Section. In summary, all leaks must be recorded and inspections must be performed at least every three months. Inspection records shall be retained for three years.

TRANSPORT OF PCB's

Licensed carriers familiar with the transport of PCB's should be contracted for any shipment of PCB's from the plant site. In addition, the following actions should be taken as protection against potential liability.

- Stipulate in the hauling or disposal contract the point at which the ownership of the PCB will change hands.
- Provide the hauler with phone numbers of the PCB owner, the destination point, and the EPA Regional Office and instruct the hauler to notify each in the event of an in-transit spill.

Specific requirements of the DOT regarding shipment of PCB's are outlined in Attachment 4 of the appendix.

STORAGE OF PCB's

(Federal Register - 5/31/79 - Pages 31555 & 31556)

All PCB articles and containers presently in storage or placed in storage before January 1, 1983, must be removed from storage and disposed of before January 1, 1984. Temporary storage of most PCB articles is permitted for up to 30 days with minimal restrictions. Longer than 30 day storage is permitted only for EPA-approved storage facilities. (An EPA-approved storage facility is defined as a roofed, walled, and diked enclosure with an impermeable floor such as concrete or steel. No such storage facility may be located where the elevation is below the 100 year flood water elevation.)

The criteria for storage of various PCB items are summarized in Table I. (It should be remembered that all storage is considered "temporary" to the extent that all PCB items must be disposed of by January 1, 1984, or one year from the date of storage following January 1, 1983.)

The major point to remember concerning PCB storage is to have previously developed a qualified transporter and disposal site, so that on-site temporary storage of PCB's can be limited to the less restrictive 30 day period.

DISPOSAL OF PCB's

(Federal Register - 5/31/79 - Pages 31545-31547)

Until recently, the only known way to destroy PCB's was through high temperature incineration. Two firms qualified for disposal in this manner are:

Rollins Environmental Services
Deer Park, Texas

Energy Systems Co.
(ENSCO)
El Dorado, Arkansas

More recently, a chemical process termed PCBX has been developed by the Sunohio Corp. in Canton, Ohio - 216/452-0837. The PCBX process makes on-site destruction of PCB's possible without the risk of handling and transporting. At present, the PCBX process has been given interim approval in Region IV for four applications specifically requested by Sunohio. For additional approval within Region IV, and approval outside Region IV, Sunohio would need to request and obtain permission from the EPA regional offices.

The requirements for disposal of various PCB items are summarized in Table II. This table does not include the PCBX process as a means of disposal.

A list of approved PCB Disposal Facilities is found in Table IV of Appendix.

SERVICING AND REBUILDING OF TRANSFORMERS

PCB "Contaminated Transformers" are subject to no restrictions on servicing except that the servicing must be performed by either the owner or operator, or by someone who has an exemption from the processing and distribution in commerce bans.

The servicing and disposal of PCB Transformers (> 500 ppm PCB) are subject to more stringent restrictions. When major repairs are needed on a PCB Transformer, retaining the transformer fluid and returning the unit to service as a PCB unit are not permissible. Any servicing of PCB Transformers that requires the removal of the coil from the casing is prohibited and PCB Transformer coils and casings must be disposed of either in a chemical waste landfill or in a high temperature incinerator. Any fluid removed from a PCB Transformer must be disposed of in an EPA approved incinerator. Servicing that does not require removal of the coil can be performed as per servicing of a PCB "Contaminated" unit.

PROPOSED REGULATIONS

Additional regulations concerning PCB's are currently under consideration. Two of the major points being contested are the 50 ppm non-regulatory level and the consideration that transformers qualify as "totally enclosed". Both of these points are discussed in detail in the March 10, 1981 Federal Register.

Also, recently enacted (effective May 11, 1981) have been more stringent inspection requirements for PCB Transformers and PCB Contaminated Transformers which pose exposure risks to food and feed products. These regulations are interpreted not to apply to Consolidated Aluminum plants which may fabricate foil products or can stock, etc., which may be used in the food industries.

Revisions to the 50 ppm limit and the "totally enclosed" definition have been stayed for 18 months, beginning April 1981. Hence, no new legislation is anticipated until at least October 1982 in regard to these areas. Should the 50 ppm limit be withdrawn or lowered, it may effect action plans as to disposal methods which would be most economical for each plant. Removal of the "totally enclosed" exemption for transformers could in the future ban the operation of existing PCB and PCB Contaminated Transformers.

Any new regulations will be forwarded promptly to all plants by the Environmental Affairs organization.

APPENDIX

- TABLE I - CRITERIA FOR TEMPORARY STORAGE OF PCB ITEMS
 PENDING DISPOSAL
- TABLE II - REQUIREMENTS FOR DISPOSAL OF PCB ITEMS
- TABLE III - PROPERTIES OF PCB
- TABLE IV - LIST OF APPROVED PCB DISPOSAL FACILITIES
- ATTACHMENT 1 - ANNUAL PCB RECORD SHEET (PCB ITEMS IN SERVICE)
- ATTACHMENT 2 - ANNUAL PCB RECORD SHEET (PCB ITEMS OUT OF SERVICE)
- ATTACHMENT 3 - PCB TRANSFORMER INSPECTION SHEET
- ATTACHMENT 4 - D.O.T. REGULATIONS FOR SHIPMENT OF PCB's

<p style="text-align: center;">TABLE I CRITERIA FOR TEMPORARY STORAGE OF PCB ITEMS PENDING DISPOSAL</p>

PCB ITEM	STORAGE REQUIREMENTS
1. Non-leaking PCB article or equipment. (ie - PCB Transformer)	<ul style="list-style-type: none"> • Temporary storage is permitted in <u>any convenient location</u> for up to <u>30 days</u> where the item is safe from damage. • After <u>30 days</u>, the item must be stored in an <u>approved EPA storage area</u>. • Items in temporary storage must be identified as to the date removed from service. • Temporary storage areas must be checked for leaks at least once every 30 days.
2. Non-leaking PCB contaminated Transformers.	<ul style="list-style-type: none"> • PCB contaminated Transformers <u>still containing dielectric fluid</u> may be stored on skids adjacent to an EPA approved storage area until 1/1/83. Weekly inspection for leakage is required. • PCB contaminated Transformers <u>drained of dielectric fluid</u> may be sold or disposed of in any manner.
3. Leaking PCB articles and equipment	<ul style="list-style-type: none"> • After containing in an EPA-DOT approved container, temporary storage is permitted for up to 30 days in any location where the container is not subject to damage. • Enough sorbents must be added to convert the liquid to a non-flowing mixture. • Storage is permitted in an EPA approved facility until 1/1/84.

PCB ITEM

STORAGE REQUIREMENTS

4. PCB Containers -
of non-liquid PCB's and PCB
contaminated liquids in concentrations
of 50-499 ppm.

- Temporary storage of up to 30 days permitted, provided a spill-prevention control and counter measure plan has been prepared.
- Storage is permitted in an EPA approved facility until 1/1/84

-
5. PCB liquids -
(liquids with > 500 ppm PCB)

- It is not permissible to store PCB liquids. Such liquids must be disposed of as soon as practicable.
 - It is permissible to store PCB for topping off in service PCB transformers in an EPA approved storage facility.
-

<p align="center">TABLE II REQUIREMENTS FOR DISPOSAL OF PCB ITEMS</p>

PCB ITEM	DISPOSAL REQUIREMENTS
1. PCB liquids (> 500 ppm)	<ul style="list-style-type: none"> • Disposal permitted only in EPA-approved incinerator.
2. PCB Contaminated Waste Liquids (50 - 499 ppm)	<ul style="list-style-type: none"> • Disposal permitted in EPA-approved incinerator, high-efficiency boiler, or EPA-approved chemical waste landfill.
3. Non-liquid PCB's (contaminated rags, soil, etc.)	<ul style="list-style-type: none"> • Disposal permitted in EPA-approved incinerator or EPA-approved chemical waste landfill.
4. PCB Transformers (> 500 ppm)	<ul style="list-style-type: none"> • Disposal permitted in EPA-approved incinerator or EPA-approved chemical waste landfill, following drainage and treatment. • Coolant drained from transformer, and solvent used to flush transformer, must be disposed of as PCB liquids.
5. PCB Contaminated Transformer (50 - 499 ppm)	<ul style="list-style-type: none"> • Carcass may be sold or disposed of in any manner following drainage of the fluid. • Contaminated mineral oil must be disposed of as prescribed in Federal Register - 5/31/79 - page 31545. • Other contaminated non-PCB coolants must be disposed of as PCB Contaminated Waste Liquids.
6. Other PCB Articles	<ul style="list-style-type: none"> • Disposal permitted in EPA-approved incinerator or EPA chemical waste landfill, following thorough draining and proper disposal of liquids.

PCB ITEM	DISPOSAL REQUIREMENTS
7. PCB Containers - (Used to contain PCB concentrations > 500 ppm)	<ul style="list-style-type: none"> • Disposal permitted in EPA-approved incinerator or EPA-approved chemical waste landfill following proper disposal of liquid.
8. PCB Containers - (Used to contain PCB concentrations of 50 - 499 ppm)	<ul style="list-style-type: none"> • Disposal permitted as municipal solid waste following thorough draining and proper disposal of PCB contaminated liquid.

TABLE III

PCB	POLYCHLORINATED BIPHENYL	
Common Synonyms PCB Chlorinated biphenyl Aroclor	Only liquid to solid powder Light yellow liquid, or white powder Weak odor Sinks in water.	6. FIRE HAZARDS 6.1 Flash Point: >286°F 6.2 Flammable Limits in Air: Data not available 6.3 Fire Extinguishing Agents: Water, foam, dry chemical, or carbon dioxide 6.4 Fire Extinguishing Agents Not to be Used: Not pertinent 6.5 Special Hazards of Combustion Products: Irritating gases are generated in fires. 6.6 Behavior in Fire: Not pertinent 6.7 Ignition Temperature: Data not available 6.8 Electrical Hazard: Not pertinent 6.9 Burning Rate: Data not available
Stop discharge if possible. Keep people away. Avoid contact with liquid and solid. Call fire department. Isolate and remove discharged material. Notify local health and pollution control agencies.		8. WATER POLLUTION 8.1 Aquatic Toxicity: 0.278 ppm/96 hr/bluegill/TLM/fresh water 0.005 ppm/336-1080 hr/pinfish/TLM/salt water 8.2 Waterfowl Toxicity: 1 D ₅₀ 2000 ppm (mallard duck) 8.3 Biological Oxygen Demand (BOD): Very low 8.4 Food Chain Concentration Potential: High
Fire	Combustible. Extinguish with water, foam, dry chemical, or carbon dioxide.	9. SELECTED MANUFACTURERS Monsanto Industrial Chemicals Co. 800 North Lindbergh Blvd. St. Louis, Mo 63166
Exposure	CALL FOR MEDICAL AID. LIQUID OR SOLID Irritating to skin and eyes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water.	7. CHEMICAL REACTIVITY 7.1 Reactivity with Water: No reaction 7.2 Reactivity with Common Materials: No reaction 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.	10. SHIPPING INFORMATION 10.1 Grades or Purity: 11 grades (some liquid, some solids) which differ primarily in their chlorine content (20-68% by weight) 10.2 Storage Temperature: Ambient 10.3 Inert Atmosphere: No requirement 10.4 Venting: Open
1. RESPONSE TO DISCHARGE <small>(See Response Methods Handbook, CG 448-4)</small> Issue warning—water contaminant Should be removed Chemical and physical treatment	2. LABELS No hazard label required by Code of Federal Regulations	11. HAZARD ASSESSMENT CODE <small>(See Hazard & Assessment Handbook, CG 448-3)</small> 11
3. CHEMICAL DESIGNATIONS 3.1 Synonyms: Aroclor; Chlorinated biphenyl; Halogenated wastes; PCB; Polychlorobiphenyls 3.2 Coast Guard Competibility Classification: Not applicable 3.3 Chemical Formula: (C ₁₂ H ₉₋₁₀)Cl ₂ 3.4 IMCO/United Nations Numerical Designation: Not listed	4. OBSERVABLE CHARACTERISTICS 4.1 Physical State (as shipped): Liquid or solid 4.2 Color: Pale yellow (liquid); colorless (solid) 4.3 Odor: Practically odorless	12. HAZARD CLASSIFICATIONS 12.1 Code of Federal Regulations: Not listed 12.2 NAS Hazard Rating for Bulk Water Transportation: Not listed 12.3 NFPA Hazard Classifications: Not listed
5. HEALTH HAZARDS 5.1 Personal Protective Equipment: Gloves and protective garments 5.2 Symptoms Following Exposure: Acne from skin contact. 5.3 Treatment for Exposure: SKIN: wash with soap and water. 5.4 Toxicity by Inhalation (Threshold Limit Value): 0.5 to 1.0 mg/m ³ 5.5 Short-Term Inhalation Limit: Data not available 5.6 Toxicity by Ingestion: Grade 2; oral rat LD ₅₀ = 3980 mg/kg 5.7 Late Toxicity: Causes chromosomal abnormalities in rats, birth defects in birds 5.8 Vapor (Gas) Irritant Characteristics: Vapors cause severe irritation of eyes and throat and cause eye and lung injury. They cannot be tolerated even at low concentrations. 5.9 Liquid or Solid Irritant Characteristics: Contact with skin may cause irritation. 5.10 Odor Threshold: Data not available		13. PHYSICAL AND CHEMICAL PROPERTIES 13.1 Physical State at 15°C and 1 atm: Solid or liquid 13.2 Molecular Weight: Not pertinent 13.3 Boiling Point at 1 atm: Very high 13.4 Freezing Point: Not pertinent 13.5 Critical Temperature: Not pertinent 13.6 Critical Pressure: Not pertinent 13.7 Specific Gravity: 1.3-1.8 at 20°C (liquid) 13.8 Liquid Surface Tension: Not pertinent 13.9 Liquid-Water Interfacial Tension: Not pertinent 13.10 Vapor (Gas) Specific Gravity: Not pertinent 13.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent 13.12 Latent Heat of Vaporization: Not pertinent 13.13 Heat of Combustion: Not pertinent 13.14 Heat of Decomposition: Not pertinent 13.15 Heat of Solution: Not pertinent 13.16 Heat of Polymerization: Not pertinent
NOTES		

(f) *Retention of Special Records by Storage and Disposal Facilities.* In addition to the information required to be maintained under paragraphs (b), (c), (d) and (e) of this section, each owner or operator of a PCB storage or disposal facility (including high efficiency boiler operations) shall collect and maintain for the time period specified in paragraph (b) of this section the following data:

(1) All documents, correspondence, and data that have been provided to the owner or operator of the facility by any State or local government agency and that pertain to the storage or disposal of PCBs and PCB items at the facility.

(2) All documents, correspondence, and data that have been provided by the owner or operator of the facility to any State or local government agency and that pertain to the storage or disposal of PCBs and PCB items at the facility.

(3) Any applications and related correspondence sent by the owner or operator of the facility to any local, State, or Federal authorities in regard to waste water discharge permits, solid waste permits, building permits, or other permits or authorizations such as those required by Annex I—§ 761.40(d) and Annex II—§ 761.41(c).

EPA LIST OF APPROVED PCB DISPOSAL FACILITIES

EPA REGION II (26 Federal Plaza, New York, N.Y. 10007)

Facility: Newco Chemical Waste Systems, Inc.

Facility address: 4526 Royal Avenue, Niagara Falls, N.Y. 14303.

Facility telephone number: 716-285-8944.

Type of facility approved: Chemical waste landfill.

Type of PCB waste handled: Capacitors (small and large); properly drained transformers; contaminated soil, dirt, rags, and other debris; dredge spoils; municipal sludges; and properly drained containers (drums).

Expiration date of approval: August 18, 1981.¹

EPA regional office contact: Wayne Pierre.

EPA telephone number: 212-264-0505.

[43 FR 38088, August 25, 1978]

Facility: General Electric Co., Silicone Products Division.

Facility address: 260 Hudson River Road, Waterford, N.Y. 12189.

Facility telephone number: 518-237-2330.

Type of facility approved: Incinerator.

Type of PCB waste handled: Approval allows G.E. to incinerate only those PCB wastes which are generated on-site, i.e., G.E. cannot accept PCBs for incineration from any other company or any other G.E. facility.

Expiration date of approval: September 1, 1981.

EPA regional office contact: Wayne Pierre.

EPA telephone number: 212-264-0505.

[43 FR 50041, October 26, 1978]

Facility: SCA Chemical Services, Inc.
Facility address: 1550 Balmer Road, Model City, N.Y. 14107.

Facility telephone number: 716-754-8231.

Type of facility approved: Chemical waste landfill.

Type of PCB waste handled: Capacitors (small and large); properly drained transformers; contaminated soil, dirt, rags, and other debris; dredge spoils; municipal sludges; and properly drained containers (drums).

Expiration date of approval: October 2, 1981.¹

EPA regional office contact: Wayne Pierre.

EPA telephone number: 212-264-0505.

[43 FR 50041, October 26, 1978]

EPA Region IV (345 Courtland Street, Northwest, Atlanta, Ga. 30308)

Facility: Waste Management of Alabama, Inc. *Facility Address:* P.O. Box 1200, Livingston, Ala. 35470. *Facility Telephone No.:* 205-652-9529. *Type of Facility Approved:* Chemical Waste Landfill. *Type of PCB Waste Handled:* Capacitors (small and large). Properly drained transformers. Contaminated soil, dirt, rags, and other debris. Dredge spoils. Municipal sludges. Properly drained containers (drums). *Expiration Date of Approval:* Open-ended.¹ *EPA Regional Office Contact:* Mr. James Scarbrough. *EPA Telephone No.:* 404-521-3118.

[43 FR 30882, July 18, 1978]

EPA REGION V (230 South Dearborn Street, Chicago, Illinois 60604).

1. Facility: Newco Chemical Waste Systems of Ohio, Inc. *Facility Address:* 5092 Aber Road, Williamsburg, Ohio 45176. *Facility Telephone Number:* (513) 724-6114. *Type of Facility Approved:* Chemical Waste Landfill. *Type of PCB Waste Handled:* Capacitors (small and large). Properly drained transformers. Contaminated soil, dirt, rags and other debris. Dredge spoils. Municipal sludges. Properly drained containers (drums). Liquid PCB's at a concentration of between 50 to 500 ppm. *Expiration Date of Approval:* Open-ended*. *EPA Regional Office Contact:* Karl Klepitsch. *EPA Telephone Number:* (312) 353-2197.

[44 FR 66989, November 21, 1979]

EPA REGION IX (215 Freemont St., San Francisco, California 94105).

¹NOTE.—After Jan. 1, 1980, PCB capacitors and contaminated soils, rags, and other debris cannot be disposed of in chemical waste landfills. A special provision does permit, without time limits, the disposal in chemical waste landfills of contaminated soil and debris resulting from spills or from old disposal sites that predate the PCB regulations.

Facility: Casmalia Disposal. *Facility Address:* 539 Ysidro Rd., P.O. Box 5275, Santa Barbara, California 93108-main office (site located near Casmalia in Santa Barbara County). *Facility Telephone Number:* (805) 969-4703. *Type of Facility Approved:* Chemical Waste Landfill. *Type of PCB Waste Handled:* Capacitors (small and large); Properly drained transformers; Contaminated soil, dirt, rags and other debris; Dredge spoils; Municipal sludges; and Properly drained containers (drums). *Expiration Date of Approval:* Open-ended*. *EPA Regional Office Contact:* Raymond Seid *EPA Telephone Number:* (415) 556-3450.

[43 FR 59432, December 20, 1978]

Facility: Nuclear Engineering Co., Inc. *Facility Address:* 9200 Shelbyville Rd. Suite, 526 P.O. Box 7246, Louisville, Kentucky 40207 main-office (site located near Beatty, Nev. in Nye County). *Facility Telephone Number:* (502) 426-7160. *Type of Facility Approved:* Chemical Waste Landfill. *Type of PCB Waste Handled:* Capacitors (small and large); Properly drained transformers; Contaminated soil, dirt, rags and other debris; Dredge spoils; Municipal sludges; and Properly drained containers (drums). *Expiration Date of Approval:* Open-ended*. *EPA Regional Office Contact:* Raymond Seid. *EPA Telephone Number:* (415) 556-3450.

[43 FR 59432, December 20, 1978]

EPA REGION X (1200 SIXTH AVENUE, SEATTLE, WASH., 98101)

Facility: Chem-Nuclear Systems, Inc. *Facility Address:* P.O. Box 1289, Portland, Ore. 97208. Main office (site located in Arlington, Ore.). *Facility Telephone No.:* 503-223-1912. *Type of Facility Approved:* Chemical Waste Landfill. *Type of PCB Waste Handled:* Capacitors (small and large). Properly drained transformers. Contaminated soil, dirt, rags, asphalt, and other debris. Properly drained containers (drums). *Expiration Date of Approval:* January 1, 1980. *EPA Regional Office Contact:* Mr. Roger Fuentes. *EPA Telephone No.:* 206-442-1260.

[43 FR 30882, July 18, 1978]

Facility: Wes-Con, Inc. *Facility Address:* P.O. Box 564, Twin Falls, Idaho 83301. Main office (site located in Grand View, Idaho). *Facility Telephone No.:* 208-734-7711. *Type of Facility Approved:* Disposal in Missile Silos. *Type of PCB Waste Handled:* Capacitors (small and large). Properly drained transformers. Contaminated soil, dirt, rags, asphalt, and other debris. Properly drained containers (drums). *Expiration Date of Approval:* January 1, 1980. *EPA Regional Office Contact:* Mr. Roger Fuentes. *EPA Telephone No.:* 206-442-1260.

[43 FR 30882, July 18, 1978]

ATTACHMENT 1
CONSOLIDATED ALUMINUM
ANNUAL PCB RECORD

(PCB Items Remaining in Service)

AT _____

DATE _____

PERIOD ENDING _____

COMPILED BY _____

APPROVED BY _____

<u>CATEGORY</u>	<u>IDENTIFICATION</u>	<u>LOCATION</u>	<u>PCB LEVEL</u> in ppm <u>(If Known)</u>	<u>WEIGHT OF PCB</u> <u>(Kgs)</u>
PCB ITEMS				
PCB TRANSFORMERS				
PCB LARGE, HIGH & LOW VOLTAGE CAPACITORS				

Retain this record for 5 years.

POLYCHLORINATED BIPHENYLS

TABLE IV

CHW:21
35:0119

ATTACHMENT 2
CONSOLIDATED ALUMINUM
ANNUAL PCB RECORD

(PCB Items Out of Service)

PLANT _____

DATE _____

PERIOD ENDING _____

COMPILED BY _____

APPROVED BY _____

<u>CATEGORY</u>	<u>MATERIAL IDENTIFICATION</u>	<u>STORAGE IDENTIFICATION/ LOCATION</u>	<u>PCB LEVEL in ppm (If Known)</u>	<u>WEIGHT (Kgs)</u>	<u>DATE REMOVED FROM SERVICE</u>	<u>DATE STORED</u>	<u>DATE TRANSPORTED</u>	<u>NAME OF TRANSPORTER & DISPOSAL SITE</u>
PCB ITEMS								
PCB TRANSFORMERS								
PCB - LARGE, HIGH & LOW VOLTAGE CAPACITORS								

Retain this record for 5 years.

INSPECTION REPORT

PLANT

QUARTERLY INSPECTION

FOR PERIOD _____ to _____

APPROVED BY _____

[illegible]

Retain this record for 3 years



JUL 27 1981

INTER-OFFICE MEMO

To Jack Conroy AI Date July 24, 1981

From Tom Komadina AI Copy to Warren Hoffmann

Subject D.O.T. and E.P.A. Regulations for Shipments of Polychlorinated Biphenyles (RQ 10/454) from Tennessee to Arkansas and Alabama

D.O.T.

The D.O.T. regulations as spelled out in part 172.101 of CFR 49 are as follows:

- 1) Hazardous material description and proper shipping name: Polychlorinated biphenyles (RQ 10/454).
- 2) Hazard class: ORM-E.
- 3) Identification number: UN 2315.
- 4) Label required: None.
- 5) Specific requirements: Part 173.510.

(For packages of 110 gallon capacity or less, sufficient outage must be provided so the packaging will not be liquid full at 130° F (55° C).)

(If the liquid has an absolute vapor pressure exceeding 16 p.s.i. at 100° F (38° C), the primary packaging must be capable of withstanding the inside vapor pressure at 130° F without leakage.

The above were the only D.O.T. regulations that are specific; however, part 173.24 (enclosed) spells out the general or standard packaging requirements for shipping ORM.

E.P.A.

Packaging: Requires a 55-17-E drum D.O.T. 18 gauge with a 2.3" hole with a threaded screw-type bung.

Labels: E.P.A. requires PCB labels (6 X 6 yellow with black lettering "Caution PCBs" etc.) and a D.O.T. ORM-E label.

Placard: Requires E.P.A. labels or placards on all sides and in each corner of the unit trailer.

Mr. Wolfgang Bradner of Kansas City E.P.A. was contacted and suggested that a drum with absorbents be shipped with the load in the event of a spill.

Mr. Jack Conroy
July 24, 1981
Page 2

Mr. Bradner also advised that the E.P.A. has no manifest requirements on PCBs; they are not regulated under R.C.R.A.. However, the state of Arkansas and some disposal facilities require the hazardous waste manifest.

Good record keeping should be the rule in case we have to prove what and how we disposed of this material.

STATE REQUIREMENTS

Mr. Young of the southern region of the E.P.A., located in Atlanta, was contacted and verified that Tennessee and Alabama do not have any additional regulations, and that if we meet the federal we will be in compliance with the state.

Mr. Southall of the State of Arkansas Pollution and Control has advised that shipments to the state of Arkansas must have an Arkansas hazardous waste manifest. Information on ordering these manifests (at \$2.00 each) can be obtained from Kathy Summer at the state office, 501-371-1701.

Any further questions, please feel free to call.

TJK/maf

Enclosures

§ 173.24 Standard Requirements for all packages.

(a) Each package used for shipping hazardous materials under this subchapter shall be so designed and constructed, and its contents so limited, that under conditions normally incident to transportation—

(1) There will be no significant release of the hazardous materials to the environment;

(2) The effectiveness of the packaging will not be substantially reduced; and

(3) There will be no mixture of gases or vapors in the package which could, through any credible spontaneous increase of heat or pressure, or through an explosion, significantly reduce the effectiveness of the packaging.

(b) Materials for which detailed specifications for packaging are not set forth in this part must be securely packaged in strong, tight packages meeting the requirements of this section.

(c) Packaging used for the shipment of hazardous materials under this subchapter shall, unless otherwise specified or exempted therein, meet all of the following design and construction criteria:

(1) Each specification container must be marked as follows:

(i) In an unobstructed area with letters and numerals identifying the container specification (e.g., DOT-1A, DOT-17E-304HT, DOT-23G40). See § 178.0-2 of this subchapter.

(ii) The name and address or symbol of person making the mark specified in paragraph (c)(1)(i) of this section. Symbol letters, if used, must be registered with the Associate Director for OE. Duplicate symbols are not authorized.

(iii) The markings must be stamped, embossed, burned, printed, or otherwise marked on the packaging to provide adequate accessibility, permanency, and contrast so as to be readily apparent and understood.

(iv) Unless otherwise specified, letters and numerals must be at least $\frac{1}{4}$ inch high.

(v) Packaging which does not comply with the applicable specification listed in Parts 178 and 179 of this subchapter must not be marked to indi-

cate such compliance (see § 178.0-2 and § 179.1 of this subchapter).

(2) Steel used shall be low-carbon, commercial quality steel. Stainless, open hearth, electric, basic oxygen, or other similar quality steels are acceptable. Steel sheets of specified gauges shall comply with the following:

Gauge No.	Nominal thickness (inches)	Minimum thickness (inches)
12.....	0.1046	0.0946
13.....	0.0897	0.0817
14.....	0.0747	0.0677
15.....	0.0673	0.0603
16.....	0.0598	0.0533
17.....	0.0538	0.0478
18.....	0.0478	0.0428
19.....	0.0418	0.0378
20.....	0.0359	0.0324
22.....	0.0299	0.0269
23.....	0.0269	0.0239
24.....	0.0239	0.0209
26.....	0.0179	0.0159
28.....	0.0149	0.0129
30.....	0.0120	0.0110

(3) Lumber used shall be well seasoned, commercially dry, and free from decay, loose knots, knots that would interfere with nailing, and other defects that would materially lessen the strength.

(4) Welding and brazing shall be performed in a workmanlike manner using suitable and appropriate techniques, materials, and equipment.

(5) Packaging materials and contents shall be such that there will be no significant chemical or galvanic reaction among any of the materials in the package.

(6) Closures shall be adequate to prevent inadvertent leakage of the contents under normal conditions incident to transportation. Gasketed closures shall be fitted with gaskets of efficient material which will not be deteriorated by the contents of the container.

(7) Nails, staples, and other metallic devices shall not protrude into the interior of the outer packaging in such a manner as to be likely to cause failures.

(8) The nature and thickness of the packaging shall be such that friction during transport does not generate any heating likely to decrease the chemical stability of the contents.

§ 173.25

(9) Polyethylene used must be of a type compatible with the lading and must not be permeable to an extent that a hazardous condition could be caused during transportation and handling.

(d) For specification containers, compliance with the applicable specifications in Parts 178 and 179 of this subchapter shall be required in all details, except as otherwise provided in this subchapter.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53 and App. A to Part 1)

[Amdt. 173-3, 33 FR 14921, Oct. 4, 1968, as amended by Amdt. 173-11, 34 FR 12589, Aug. 1, 1969]

NOTE: For amendments to § 173.24 see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.